

Combining Power of Platina

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356. Bodies which become wetted by fluids with which they do not combine chemically, or in which they do not dissolve, are simple and well known instances of this kind of attraction.

357. All those cases of bodies which being insoluble in water and not combining with it are hygrometric, and condense its vapour around or upon their surface, are stronger instances of the same power, and approach a little nearer to the cases under investigation. If pulverised clay, protoxide or peroxide of iron, oxide of manganese, charcoal, or even metals, as spongy platina or precipitated silver, be put into an atmosphere containing vapour of water, they soon become moist by virtue of an attraction which is able to condense the vapour upon, although not to combine it with, the substances; and if, as is well known, these bodies so damped be put into a dry atmosphere, as, for instance, one confined over sulphuric acid, or if they be heated, then they yield up this water again almost entirely, it not being in direct or permanent combination.¹

358. Still better instances of the power I refer to, because they are more analogous to the cases to be explained, are furnished by the attraction existing between glass and air, so well known to barometer and thermometer makers, for here the adhesion or attraction is exerted between a solid and gases, bodies having very different physical conditions, having no power of combination with each other, and each retaining, during the time of action, its physical state unchanged.³ When mercury is poured into a barometer tube, a film of air will remain between the metal and glass for months, or, as far as is known, for years, for it has never been displaced except by the action of means especially fitted for the purpose. These consist in boiling the mercury, or in other words, of forming an abundance of vapour, which coming in contact with every part of the glass and every portion of surface of the mercury, gradually mingles with, dilutes, and carries off the air attracted by, and adhering to, those surfaces, replacing it by other vapour, subject to an equal or perhaps greater attraction, but which when cooled condenses into the same liquid as that with which the

tube is filled.

¹ met at Edinburgh with a case, remarkable as to its extent, of hygro-metric action, assisted a little perhaps by very slight solvent power. Some turf had been well dried by long exposure in a covered place to the atmo-sphere, but being then submitted to the action of a hydrostatic press, yielded, *by the mere influence of the pressure*, 54 per cent, of water. •

² Fusinieri and Bellani consider the air as forming solid concrete films •"
these cases.—Giornale di Fisica, 1825, torn. viii. p. 262.